

=> d his

(FILE 'HOME' ENTERED AT 17:17:14 ON 28 NOV 2003)

FILE 'CA' ENTERED AT 17:17:22 ON 28 NOV 2003

L1 34746 S (NOX OR NO2 OR (NITRIC OR NITROGEN) (1A) (OXIDE OR DIOXIDE OR
MONOXIDE)) (6A) (DETECT? OR DETERMIN? OR ASSAY? OR ANALY? OR ASSES? OR
TEST? OR MEASUR? OR MONITOR? OR ESTIMAT? OR EVALUAT? OR EXAMIN? OR
CHECK? OR SENSE# OR SENSOR OR SENSING OR PROBE# OR PROBING OR
QUANTITAT? OR QUANTIF?)
L2 1456 S L1 AND (LUMINESC? OR CHEMILUMINES?)
L3 262 S L1 AND (WATER OR MOIST? OR HUMID? OR H2O) (4A) (REMOV? OR ELIMINAT? OR
INTERFER?)
L4 25 S L2 AND L3

=> d bib,ab 14 1-25

L4 ANSWER 9 OF 25 CA COPYRIGHT 2003 ACS on STN
AN 119:145373 CA
TI Characteristics of continuous **analyzers** for **nitrogen oxides** in flue
gas from municipal incinerators
AU Tanikawa, Noboru; Urano, Kohei
CS Tokyo Metrop. Clean. Lab., Tokyo, 136, Japan
SO Taiki Osen Gakkaishi (1993), 28(2), 91-8
LA Japanese
AB Characteristics of various continuous **analyzers** of **NOx** in flue gas of
municipal incinerators were studied. The analyzers were of nondispersive IR
absorption (NDIR), **chemiluminescence** (CL) and UV absorption (UV) types.
There were slight differences of records of different analyzers. CO2 and H2O
were expected to affect the records of NDIR and CL, and HCl and NH3 were
expected to affect the records of UV. It was estd. that the differences of
the records of different analyzers were dependent on the imperfect
correction of the **interference** of CO2 and H2O. NO and CO2 concn. in
calibration gas should be set at their mean concn. level in flue gas. Elec.
correction which is equiv. to mean CO2 and NOx concn. should be provided to
the recorder. **NOx analyzer** equipped with CO2 compensation **detector** should
be used. It is strongly recommended to provide a dryer to minimize the
interference of H2O in sample gas.

L4 ANSWER 16 OF 25 CA COPYRIGHT 2003 ACS on STN
AN 97:27865 CA
TI Effect of water and carbon dioxide in **chemiluminescent measurement** of **oxides**
of **nitrogen**
AU Campbell, N. T.; Beres, G. A.; Blasko, T. J.; Groth, R. H.
CS Pratt and Whitney Aircr. Group, East Hartford, CT, USA
SO Journal of the Air Pollution Control Association (1982), 32(5), 533-5
AB The quenching effect of H2O and CO2 in **measuring NOx** in gas-turbine exhaust
gases by **chemiluminescence** using samples contg. water of combustion and
ambient moisture was studied, and the use of a semipermeable membrane type
dryer for **eliminating** the **H2O interference** was evaluated using **moist** mixts.
of NO in N, NO2 in air, and of actual exhaust samples.

L4 ANSWER 21 OF 25 CA COPYRIGHT 2003 ACS on STN
AN 85:82680 CA
TI **Analysis** of **nitrogen oxides** in waste gases
IN Izumi, Jun; Ogura, Tsugitoshi
PA Mitsubishi Heavy Industries, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
PI JP 51003289 A2 19760112 JP 1974-73075 19740626

PRAI JP 1974-73075

19740626

AB NO_x in waste gases is oxidized to N₂O₅ and HNO₃, which are then thermally decompd. to NO₂. Then, the amt. of NO₂ is directly detd. without condensing water vapor in the waste gases by an anal. method such as ESR method. Optionally, the NO₂ in the waste gases is reduced to NO, the amt. of which is detd. by **chemiluminescence**, ir spectroscopic, or potentiostatic electrolysis methods after **removing moisture** from the waste gases.

L4 ANSWER 23 OF 25 CA COPYRIGHT 2003 ACS on STN

AN 84:38328 CA

TI Interference of oxygen, carbon dioxide, and water vapor on the **analysis for oxides of nitrogen by chemiluminescence**

AU Maahs, Howard G.

CS Langley Res. Cent., NASA, Langley Station, VA, USA

SO NASA Tech. Memo. (1975), NASA-TM-X-3229, 20 pp. Avail.: NTIS From: Sci. Tech. Aerosp. Rep. 1975, 13(19), Abstr. No. N75-28164

AB The interference of small concns. (<4% by vol.) of O, CO₂, and H₂O vapor on the anal. for oxides of N by **chemiluminescence** was measured. The sample gas consisted primarily of N with <100 ppm NO and with small concns. of O, CO₂, and H₂O vapor added. Results obtained under these conditions indicate that although oxygen does not measurably affect the anal. for NO, the presence of CO₂ and water vapor causes the indicated NO concn. to be too low. An interference factor, defined as the percentage change in indicated NO concn. (relative to the true NO concn.) divided by the percent interfering gas present, was detd. for CO₂ to be -0.60 ± 0.04 and for H₂O vapor to be -2.1 ± 0.3 .

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STN INTERNATIONAL LOGOFF AT 17:21:03 ON 28 NOV 2003

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(FILE 'HOME' ENTERED AT 15:14:05 ON 28 NOV 2003)

FILE 'CA' ENTERED AT 15:14:20 ON 28 NOV 2003

L1 62730 S (STACK OR FLUE) (4A) (EXHAUST OR GAS? OR VAPOR)
L2 5069 S L1 AND FILTER?
L3 780 S L2 AND (NOX OR NO2 OR (NITRIC OR NITROGEN) (1A) (OXIDE OR DIOXIDE OR MONOXIDE))
L4 34746 S (NOX OR NO2 OR (NITRIC OR NITROGEN) (1A) (OXIDE OR DIOXIDE OR MONOXIDE)) (6A) (DETECT? OR DETERMIN? OR ASSAY? OR ANALY? OR ASSES? OR TEST? OR MEASUR? OR MONITOR? OR ESTIMAT? OR EVALUAT? OR EXAMIN? OR CHECK? OR SENSE# OR SENSOR OR SENSING OR PROBE# OR PROBING OR QUANTITAT? OR QUANTIF?)
L5 113 S L3 AND L4
L6 104 S L5 NOT PY>2001

=> d bib, ab 1-104

L6 ANSWER 10 OF 104 CA COPYRIGHT 2003 ACS on STN
AN 134:119816 CA
TI Sensor system for environmental applications
AU Weathers, Jim; Ropson, Steven; Syllaio, A. J.
CS Koch Industries, Wichita, KS, USA
SO InTech (2000), 47(12), 45-47
AB The application of nondispersive IR technol. (NDIR) for the anal. of **flue gases** is discussed. The microbolometer sensor of the analyzer consists of an optimized path-length gas cell, a modulated mid-IR source, and detector and **filter** arrays. The system can measure the concn. of a mixt. of combustion gases, including CO2 in concns. in the percent range and CO, NO, NO2, and SO2 in the ppm range.

L6 ANSWER 14 OF 104 CA COPYRIGHT 2003 ACS on STN
AN 133:52845 CA
TI **Nitrogen oxide gas analyzer**
IN Shimizu, Naohito; Fujiwara, Masahiko
PA Horiba, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
PI JP 2000171357 A2 20000623 JP 1998-346108 19981204
PRAI JP 1998-346108 19981204
AB The invention relates to a **NOx gas analyzer** to **det.** **NOx** in a **flue gas**, wherein the **analyzer** has a specially designed bypass line to control a sample gas aspiration speed. The analyzer does not aspirate a sample gas more than necessary, so that a maintenance cycle for a dust **filter** and a diaphragm can be extended.

L6 ANSWER 24 OF 104 CA COPYRIGHT 2003 ACS on STN
AN 130:129205 CA
TI Gas sensor device for detecting specified oxidation components in **flue gas**
IN Suganuma, Shigeaki; Saito, Misa; Kobayashi, Takeshi
PA Shinko Electric Industries Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
PI JP 11014588 A2 19990122 JP 1997-162357 19970619
PRAI JP 1997-162357 19970619
AB In the title gas sensor device provided with a gas sensor for detecting the concn. of specified oxidn. components in **flue gas** contacted with oxidn. catalyst(s), an oxidn. catalyst-supported smoke-removing **filter** is arranged between the **flue gas** introduction opening and the gas sensor for contacting the detecting surface of the **gas** sensor with smoke-removed **flue gas**. The

filter includes a porous ceramic article having Pt and/or Pd supported on its surfaces and inner portions. The gas **sensor detects** SO_x, NO_x or CO_x.

L6 ANSWER 50 OF 104 CA COPYRIGHT 2003 ACS on STN

AN 117:177426 CA

TI A mass spectrometer-based continuous emissions monitoring system for hazardous wastes in **stack gases**

IN Bartman, Candace D.; Renfro, Candace D., Jr.; Robards, Henry L., Jr.; Connolly, Erin M.

PA Marine Shale Processors, Inc., USA

SO PCT Int. Appl., 33 pp.

PI WO 9207242 A1 19920430 WO 1991-US7449 19911016

PRAI US 1990-601299 19901022

AB The system consists of a sampler, sample transfer lines, particulate **filters**, temp. and flow controllers, and a mass spectrometric detector. The sampling subsystem is maintained at a temp. of $\geq 190^\circ$ and a flow rate of ≥ 10 L/min. The system continuously monitors SO₂, NO, HCl, Cl₂, N₂, O₂, CO₂, and Ar in **flue gases**.

L6 ANSWER 51 OF 104 CA COPYRIGHT 2003 ACS on STN

AN 117:117533 CA

TI Gas **analysis** for component concentration control, especially for **nitrogen oxides** in combustion gases

IN Kaiblinger, Heinz Juergen

PA Chlean Plants and Engineering Establishment, Liechtenstein

SO PCT Int. Appl., 34 pp.

PI WO 9204614 A1 19920319 WO 1991-CH181 19910826

US 5149983 A 19920922 US 1990-596376 19901012

US 5200629 A 19930406 US 1992-845709 19920304

PRAI CH 1990-2913 19900907

AB The concn. of NH₃ and/or NO_x is **detd.** rapidly (fraction of a second) and easily using a radiation absorption technique in which one frequency is absorbed and a second is not. Pulses of the same frequency and equal pulse signals are used. The detected signal, the median frequency of which corresponds to the reciprocal of the pulse interval, is **filtered** out. The concn. of absorbed signal is **detd.** from the changes in amplitude of the signal **filtered** out. The method allows accurate feed of a chem. substance and is suitable for use in systems for NO_x removal from exhaust gases by redn. with NH₃.

L6 ANSWER 55 OF 104 CA COPYRIGHT 2003 ACS on STN

AN 115:55895 CA

TI Multicomponent analysis using established techniques

AU Dillehay, David L.

CS Altech Syst. Corp., Moorpark, CA, 93021, USA

SO Proceedings of SPIE-The International Society for Optical Engineering (1991), 1434 (Environ. Sens. Combust. Diagn.), 56-66

AB IR **stack gas** anal. techniques have improved significantly over the last 2 decades and can provide the accuracy and sensitivity needed to meet many stack-monitoring requirements. Third generation multicomponent versions now can also measure interfering gases, and, in real time, use microprocessors to correct for lingering interference effects. This approach now offers greatly simplified and less expensive anal. systems by using just one robust IR analyzer to measure as many as 8 gases, while providing uncommon selectivity and sensitivity. The topics include: background; selectivity (Luft Detector, Microflow Detector, Gas **Filter** Correlation, Single-Beam-Dual Wavelength); sensitivity; current situation; real-time interference correction; signal processing; and results.

L6 ANSWER 67 OF 104 CA COPYRIGHT 2003 ACS on STN
AN 109:97976 CA
TI Sampling in the **measurement** of **NOx** emission
AU Ogink, R. A. M.
CS VEG - Gasinst., Apeldoorn, 7300 AC, Neth.
SO I2-Procestechnologie (1988), 4(5), 27-31
LA Dutch
AB A review with 6 refs. on sampling in **detn.** of **NOx** in the atm. The topics include the effect of materials (e.g., stainless steel) and the presence of O, CO, and H on the gas compn.; the measuring probe; the gas sample route, **filter** materials, heating, response time, and drying; conditioning, cooling, membrane driers, and diln.; and ref. gases, pressure reducers, and controls.

L6 ANSWER 73 OF 104 CA COPYRIGHT 2003 ACS on STN
AN 107:12052 CA
TI Chemiluminescence gas **analyzers** for **measurement** of **nitrogen oxides** in **flue gases** and air
AU Kuts, V. P.; Kurinnyi, V. K.; Tereshchenko, A. K.
CS Inst. Gaza, USSR
SO Energetika i Elektrifikatsiya (Kiev, Ukraine) (1986), (4), 15-16
LA Russian
AB The KhL-type gas **analyzers** for the **detn.** of **NOx** in **flue gases** or air are based on 2 reactions: (1) the redn. of **NOx** to NO in flow through a glass cloth contg. graphite at 200-600° (depending on **NOx** concn.) and (2) $\text{NO} + \text{O}_3 \rightarrow \text{NO}_2^* + \text{O}$, where **NO2*** is a luminescent mol. **detectable** by a photoelec. cell. A typical analyzer (e.g. 645 KhL-01 or GKHL 201) consists of a gas (air) **filter**, a **NOx** redn. cell, an O3 generator, a NO ozonization chamber, a chemiluminescence measurement section, and an automatic recorder. Most analyzers operate automatically for ~1 mo between inspections.

L6 ANSWER 74 OF 104 CA COPYRIGHT 2003 ACS on STN
AN 106:107272 CA
TI Apparatus for pretreatment for **flue gas** analyzer
IN Akiyama, Shigeyuki; Okayama, Yunji; Koga, Fujio
PA Horiba, Ltd., Japan
SO Jpn. Tokkyo Koho, 4 pp.
PI JP 61037580 B4 19860825 JP 1977-138556 19771117
JP 54071690 A2 19790608
PRAI JP 1977-138556 19771117
AB Sampled **flue gas** for anal. is pretreated by an app. contg. a corrosive gas removing agent to protect a gas analyzer. The corrosive gas removing agent is prepd. by mixing a nonvolatile acid, a metal, and the insol. and sparingly sol. metal salt resulting from the nonvolatile acid and the metal and by loading the mixt. on a porous substrate having a strong coking property. The pretreating app. is placed in the path leading to the gas analyzer, and the prepd. corrosive gas removing agent is packed in the pretreating app., and the packed agent is heated above water vapor condensation temp. This app. extends the service life the gas analyzer, and helps the gas analyzer to give reliable data. A **flue gas** was pretreated by a corrosive gas removing agent, and then, **NOx** in the pretreated **flue gas** was **analyzed** by an IR gas analyzer. The **flue gas** was passed through a wet **filter**, a mist catcher, a pretreating app. contg. a corrosive gas removing agent, a converter for **NOx** conversion to NO, an electron cooling app. for adjusting water vapor in the **flue gas**, and the IR gas analyzer. As a corrosive gas removing agent, H2SO4, Cu, and CuSO4 were mixed together and the mixt. was loaded in granular activated C. Then, the agent was packed in the pretreating app.

L6 ANSWER 79 OF 104 CA COPYRIGHT 2003 ACS on STN
AN 102:66726 CA
TI Pretreatment in **nitrogen oxide determination**
PA Hitachi Shipbuilding and Engineering Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
PI JP 59188553 A2 19841025 JP 1983-63504 19830411
PRAI JP 1983-63504 19830411
AB **Flue gas** is sampled and NH3 and SO3 are allowed to react to 150-250°, and then the resulting (NH4)3SO4 and NH4HSO4 are **filtered** out prior to **NOx detn.**

L6 ANSWER 83 OF 104 CA COPYRIGHT 2003 ACS on STN
AN 95:174799 CA
TI Photometric analyzer
IN Moen, Art M. D.; Robison, James R.
PA ITT Industries, Inc., USA
SO Can., 32 pp.
PI CA 1102581 A2 19810609 CA 1980-352062 19800515
US 4078896 A 19780314 US 1977-761547 19770121
PRAI US 1977-761547 19770121
AB **Flue gases** are **analyzed** for SO2, NO, and NO2 using a time-shared ref.-measure-calibrate arrangement where the same optical path is used for the ref. **filter**, the measuring **filter**, and the calibration **filter** for the gas being measured. A single ref. **filter** may be used to indicate the concn. of ≥1 gas. The photometer measures light attenuation in the wavelengths affected by absorption by the SO2 and/or NO2. The sum of NO and NO2 is **detd.** by supplying O3 to the gas being analyzed through a perforated tube.

L6 ANSWER 95 OF 104 CA COPYRIGHT 2003 ACS on STN
AN 83:102584 CA
TI Problems and experience with the **determination of nitrogen oxides (NOx)**
AU Brass, W.; Leckinghaus, H. J.; Resch, G.
CS Ver. Elektr. Westfalen A.-G., Dortmund, Fed. Rep. Ger.
SO VGB Kraftwerkstechnik (1975), 55(3), 170-4
LA German
AB The NO detn. is based on the chemiluminescence occurring during the reaction between NO and O3 according to $\text{NO} + \text{O}_3 = \text{NO}_2 + \text{O}_2$. The emitted light originates when the excited NO2 mols. (~10%) jump to their ground states. The amt. of light given off is measured and recorded by a photomultiplier. The relation between the NO concn. to emitted light is strictly linear in the 0.01-1000 pm range. **NOx** concns. can be sep. **detd.** The whole device is compacted into a unit which can be loaded or unloaded by a fork lift truck. The O3 is sep. prepd. by passing air through an elec. discharge. The resulting O3-enriched air (contg. ~ 2% O3) is used for the reaction. Other accessories are heaters for a no. of connections to prevent condensation and an air **filter** to remove dust and other suspended matter. NO and **NOx detns.** in the **flue gases** of a boiler facility are described. The device can be used also for NO and **NOx detns.** in other locations, such as streets.

L6 ANSWER 98 OF 104 CA COPYRIGHT 2003 ACS on STN
AN 81:95796 CA
TI An instrument for simultaneous **monitoring nitrogen oxides** and sulfur dioxide in stationay sources
AU Tucker, Heul C.; Cheng, Joseph
CS Dayton Lab., Monsanto Res. Corp., Dayton, OH, USA
SO U. S. Nat. Tech. Inform. Serv., PB Rep. (1973), No. 231084/5GA, 48 pp.
Avail.: NTIS From: Govt. Rep. Announce. (U. S.) 1974, 74(12), 71
AB A Monsanto Model 3409 Chemiluminescent Ambient Air Monitor was converted to a 2-channel configuration for simultaneously **monitoring NOx** and SO2 in **stack**

gases. Channel sepn. was obtained by narrow-band optical **filters.** The analog sample-hold part of the automatic O circuit was replaced by a digital memory circuit. A permeation dryer was included to remove water from the sample. The at. O source was changed to an O3 generator-thermal decompn. configuration. A microwave O generator was tested also.

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ANSWER 99 OF 104 CA COPYRIGHT 2003 ACS on STN

AN

78:47376 CA

TI

Qualification testing of an infrared **analyzer** system for sulfur dioxide and **nitric oxide** in power plant **stack gas**

AU

Jacquot, R. D.; Houser, E. A.

CS

Public Serv. Co. Colorado, Denver, CO, USA

SO

Advances in Instrumentation (1972), 27(Pt. 3), 730, 17 pp.

AB

A description is given of a field qualification test carried out to det. application suitability of an anal. sampling system for the measurement of SO2 and NO in coal-fired power plant **stack gas.** The qualification test was carried out as a result of operational problems experienced with the original system. After modification, the system was operated for approx. 6 weeks during which time daily comparisons were made between analyzer readings and wet chem. detns. for SO2 and NO. Overall agreement was >5% on the av. (relative to the lab. results) and >11% at the 95% confidence level. Analyzer stability (drift) was found to av. <1% of full scale/day; the 95% confidence level extremes were <5% of full scale/day. The effects of several sample conditioning parameters were evaluated such as adsorption in sample lines and **filter**; cooling and condensing; interference by water vapor and CO2. All were found to have an insignificant effect on the anal. within the accuracy obsd. The modified sampling-anal. system was suitable as a process monitor for SO2 and NO in power plant **stack gases.**

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STN INTERNATIONAL LOGOFF AT 15:24:07 ON 28 NOV 2003